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DATE: February 24, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Mossbrook et al	Group Art Unit: 1761
Serial No.:	09/588,405	Examiner: S. Weinstein
Filing Date:	June 6, 2000	Docket No.: D-43310-01
Title:	Printed Thermoplastic Film with Radiation-Cured Overprint Varnish	

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BRIEF ON APPEAL

This Brief is filed in triplicate in support of a Notice of Appeal mailed September 19, 2003 and received by the Patent Office on September 24, 2003, the period for filing having been extended to February 24, 2004 by the attached Petition for Extension of Time. Appellant appealed from the Office Action mailed June 19, 2003, which finally rejected all pending claims of the above-referenced patent application.

Please charge the $330 fee believed due under 35 C.F.R. § 1.17(c) for filing this Brief, as well as any additional fees or crediting any overpayments, to Account No. 07-1765.

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Real Party in Interest

The real party in interest is Cryovac, Inc., assignee of the above-referenced patent application.

Related Appeals and Interferences

There are no other appeals or interferences known to Appellant, the Appellant's legal representative, or assignee which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-15 and 17-40 are pending. Claim 16 was canceled. Claims 37-40 have been withdrawn from consideration as non-elected species. 1-15 and 17-36 are appealed. A copy of these claims appears in the Appendix.

Status of Amendments

No amendment was filed subsequent to the final rejection.

Summary of the Invention

In a first aspect, a packaged food product comprises a food product and a package enclosing the food product. (Page 5, lines 19-22.) The package comprises a coated, printed film comprising a substrate film comprising one or more thermoplastic materials. (Page 5, line 24- page 6, line 26.) The substrate film has an average thickness of less than about 15 mils. (Page 7, lines 7-13.) A printed image is on the print side of the substrate film. (Page 17, line 18 – page 19, line 15.) A radiation-cured varnish is over the printed image. (Page 19, line 17-21.)

The radiation-cured varnish is formed by: 1) coating the printed image with a radiation-curable varnish comprising one or more polymerizable reactants and optionally one or more photointiators; and 2) subsequently exposing the radiation-curable varnish to radiation sufficient to polymerize at least 90 weight % of the one or more polymerizable reactants. (Page 19, line 22 – page 22, line 15; page 25, line 14 – page 26, line 9.) The radiation-curable varnish

includes less than about 20 % monofunctional monomer based on the weight of the radiation-curable varnish. (Page 24, lines 18-23.)

When the coated, printed film is tested according to the FDA migration test protocol, no more than 50 parts per billion total of any of the polymerizable reactants and the optional photoinitiators migrate within 10 days at 40°C from the coated, printed film into a food simulant selected from the group consisting of i) 95 weight % ethanol and 5 weight % water and ii) 5 weight % ethanol and 95 weight % water, where the food simulant is enclosed within a test container formed from the coated, printed film so that the food simulant contacts the food side of the substrate film and the ratio of volume of food simulant to surface area of coated, printed film is 10 milliliters per square inch. (Page 3, lines 6-23; page 13, line 26 - page 14, line 5; page 35, lines 5-10.)

In a second aspect, a packaged food product includes a food product and a package enclosing the food product. (Page 5, lines 19-22.) The package includes a coated, printed film. The coated, printed film includes a substrate film including one or more thermoplastic materials and having an average thickness of less than about 15 mils. (Page 5, line 24-page 6, line 26; page 7, lines 7-13.) An image is printed on the print side of the substrate film. (Page 17, line 18 – page 19, line 15.) A radiation-cured varnish covers the printed image. (Page 19, lines 17-21.) The radiation-cured varnish was formed by coating the printed image with a radiation-curable varnish that includes one or more polymerizable reactants and optionally one or more photointiators. The radiation-curable varnish is subsequently exposed to radiation sufficient to polymerize at least 90 weight % of the polymerizable reactants. (Page 19, line 22 – page 22, line 15; page 25, line 14- page 26, line 9.) The package includes one or more heat-sealed regions. At least a portion of the radiation-cured varnish extends into the heat-sealed region. The weight of the radiation-cured varnish per unit area of substrate film in the portion of the radiation-cured varnish extending into the heat-sealed region is at least substantially equal to the weight of radiation-cured varnish per unit area of substrate film outside of the heat-sealed region. (Page 31, line 4 – page 32, line 3.)

In a third aspect, a packaged food product includes a food product and a package enclosing the food product. (Page 5, lines 19-22.) The package includes a coated, printed film. The coated, printed film includes a substrate film including one or more thermoplastic materials

and having an average thickness of less than about 15 mils. An image is printed on the print side of the substrate film. (Page 5, line 24-page 6, line 26; page 7, lines 7-13.) A radiation-cured varnish covers the printed image. (Page 19, lines 17-21.) The radiation-cured varnish was formed by coating the printed image with a radiation-curable varnish that includes one or more polymerizable reactants. (Page 19, line 22 – page 22, line 15; page 25, line 14- page 26, line 9.) The radiation-curable varnish is subsequently exposed to an electron-beam radiation source having an energy of less than 100 keV in an amount sufficient to polymerize at least 90 weight % of the polymerizable reactants. (Page 26, line 22 – page 27, line 2.)

Issues

The issues presented for review are whether *prima facie* obviousness has been established with respect to the pending claims 1-15 and 17-36, which have been rejected as obvious under 35 U.S.C. § 103(a) in view of a combination of the following:

1) JP 9-302264 to **Nakai** (English Translation);

2) McIntyre, "UV-Cured Durable Top Coats: A Replacement for OPP & PET Film Laminations," Presented at Future-Pak 1997, October 28-29, 1997 ("**McIntyre I**");

3) Ravijst, "Radiation Cure Applications in the Packaging Industry," Packaging India, pgs. 107-109 (Dec. '97) ("**Ravijst**");

4) McIntyre, "The Practical Implications of EB Hybrids", pp. 76-78, Converting Magazine, February 1996 ("**McIntyre II**");

5) U.S. Patent 3,989,609 to **Brack**;

6) U.S. Statutory Invention Registration H304 to **Vorrier**; and

7) Applicants' alleged admission of the prior art.

Grouping of Claims

The Examiner has grouped the claims 1-15 and 17-39 together for an obviousness rejection. These claims do not stand or fall together. Applicants explain below why the claims of the rejected group are believed to be separately patentable.

Argument

I. *Prima Facie* Obviousness Has Not Been Established.

Claims 1-15 and 17-36 were rejected under 35 U.S.C. §103(a) as obvious in view of Nakai combined with McIntyre I, Ravijst, McIntyre II, Brack, Vorrier, and Applicants' alleged admission of the prior art. Applicants respectfully traverse this rejection.

Nakai teaches a method of forming a surface-protective layer on food packaging materials. (Nakai Translation at page 2.) An electron-beam curable coating is applied to a food packaging material. (*Id.* at page 3.) The coating is cured by electron beam exposure. (*Id.*) Nakai discloses that unreacted monomer "can remain in the cured product" after the electron beam exposure. (*Id.*) However, the underlying packaging film may become brittle if sufficient electron beam exposure is used to completely extinguish residual unreacted monomer. (*Id.*)

To reduce the amount of residual unreacted monomer, Nakai performs the step of exposing the coating to ultraviolet radiation immediately after the electron beam radiation exposure. (*Id.*) This additional step reduces the amount of unreacted monomer without detrimentally affecting the underlying film's properties. (*Id.*)

Nakai also teaches that the electron beam-curable coating may contain *mono*functional monomer, *di*functional monomer, and *tri*functional and higher monomer. (*Id.* at page 5.) The only reference to the amount of *mono*functional monomer in the electron beam-curable coating is "30 weight parts acryloylmorpholine." (*Id.* at pages 6-8; Examples 1-4.) Acryloylmorpholine is a monofunctional monomer.

A. Claims 1-15, 17, and 27-36.

To establish a *prima facie* case of obviousness, the Examiner must clear at least two hurdles. First, the Examiner must point out a teaching or suggestion in the prior art that would have motivated one of skill in the art to make the proposed combination of references. *See In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) (cited by MPEP §2143.010. Second, the prior art must provide a reasonable expectation that the proposed modification will succeed – the reasonable expectation of success must *not* be based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (cited by MPEP §2142).

Applicants respectfully submit that a *prima facie* case of obviousness has not been established to shift the burden of rebuttal to the Applicants. The Office Actions of this case fail to identify any teachings or suggestions in the prior art that would have motivated one of skill to combine any of the six cited supplemental references with the primary Nakai reference.

Further, the Office Actions of this case fail to identify why the proposed combined prior art would have any reasonable expectation of success in producing a packaged food product having a coated, printed film with the migration characteristics recited in claim 1.

The Examiner states that "Nakai teaches radiation to cure the varnish and reduce remaining monomer to very small amounts in order to reduce toxicity which is applicants problem and solution." (Office Action mailed June 19, 2003 at page 2, lines 23-24.) Nakai does identify this *problem*, which Applicants' invention addresses. However, Applicants respectfully disagree that Nakai teaches Applicants' *solutions* to that problem for food packaging.

This is because, for example, Nakai fails to teach or suggest a radiation-curable varnish that "includes less than about 20 % monofunctional monomer" as recited in claim 1. To the direct contrary, the Examples 1-4 of Nakai teach a radiation-curable varnish having 30 weight parts (i.e., 30 weight %) acryloylmorpholine, a monofunctional monomer.

The Office Action seeks to supplement the shortcomings of Nakai by stating that "providing an initial lower amount of monomer would be nothing more than common sense. That is, if unreacted monomer is a disadvantage, start out with a lesser amount of unreacted monomer." (Office Action mailed June 19, 2003 at page 3, lines 3-5.)

However, this statement ignores that claim 1 recites "less than about 20 %" of a *specific* type of monomer – namely, *monofunctional* monomer. Monofunctional monomer is just one of several types of monomers. Monomers may be, for example, *mono*functional, *di*functional, and *tri*functional, etc., as discussed in the Application at page 20, lines 17-21 and in Nakai at translation page 5, 2nd column, lines 6-24. Nothing in Nakai teaches or suggests the use of less than 20% *monofunctional* monomer.

The situation in the present case is analogous to *In re Thrift*, in which the Examiner rejected a claim 11 as obvious because the "use of grammar is old and well known in the art of speech recognition as a means of optimization which is highly desirable." *In re Thrift*, 63 USPQ2d 2002, 2007 (Fed. Cir. 2002). However, the Federal Circuit reasoned that the

Examiner failed to address claim 11's specific grammar-creation capability recitations of "extracting, modifying, or processing the grammar to interact with hypermedia sources." *Id.* at 2008. Because the Examiner failed to address the specific claim recitations, the Federal Circuit held that the Examiner's "general and broad conclusion" of obviousness was inadequately supported by evidence. *Id.*

Just as the Examiner in *Thrift* failed to specifically address the grammar-creation recitations of claim 11, so too has the Examiner in the present case failed to specifically address the *monofunctional* monomer recitation of claim 1. Therefore, just as the Federal Circuit held that the obviousness conclusion for claim 11 in *Thrift* was inadequately supported, so too should the Board in this case find that the Examiner's claim 1 obviousness conclusion is inadequately supported.

Although the Examiner in the present case appeals to "common sense" to modify Nakai with "an initial lower amount of monomer," the Federal Circuit has specifically rejected the approach of basing an obviousness rejection on conclusory "common sense" that is unsupported by objective evidence on record to support a combination of references. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434-35 (Fed. Cir. 2002). Deficiencies of the references to support their combination "cannot be remedied by . . . general conclusions about what is 'basic knowledge' or 'common sense'" – rather, "that knowledge must be articulated and placed on the record." *Id.* at 1435.

The Examiner in the present case also states that "the particular concentration [of monomer that] one chooses to use is seen to have been an obvious routine determination." (Office Action mailed June 19, 2003 at page 4, lines 10-11.) However, this "obvious to experiment" conclusion is *not* the standard for obviousness. *In re Dow Chem.*, 5 U.S.P.Q.2d 1529, 1532 (Fed. Cir. 1988). Rather, both "the suggestion and the expectation of success must be found in the prior art, not in the applicant's disclosure." *Id.* at 1531. The Examiner in the present has established neither the suggestion nor the motivation *in the prior art* to modify the Nakai reference as proposed, and has not established the reasonable likelihood of success in obtaining the migration results recited in claim 1. Thus, the requirements to establish *prima facie* obviousness have not been met.

The Examiner further states that whether "one uses 20% or 30% of the type of monomer in the absence of an unexpected result would have been an obvious optimization." (Office Action mailed February 13, 2003 at page 4, lines 9-10.) However, Applicants have not argued unexpected results to overcome a *prima facie* case of obviousness. Applicants need not show indicia of non-obviousness (e.g., unexpected results) unless the burden of rebuttal has been shifted to Applicants by a *prima facie* case of obviousness. Applicants respectfully assert that a *prima facie* case of obviousness has not been established to shift the burden of rebuttal to Applicants for the reasons discussed above.

A claimed invention is not obvious in view of a proposed combination of references that fails to teach or suggest all of the claim recitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (cited by MPEP §2143.03). Each claim recitation must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (cited by MPEP §2143.03). Since nothing in the proposed combinations of references teaches or suggests the dependent claim recitations cited below, a *prima facie* obviousness has not been established for these dependent claims.

Regarding dependent claim 2, the proposed combination of references fails to teach or suggest the claim 2 recitation that:

> the weight of the radiation-cured varnish per unit area of substrate film in the portion of the radiation-cured varnish extending into the heat-sealed region is at least substantially equal to the weight of radiation-cured varnish per unit area of substrate film outside of the heat-sealed region.

This feature is discussed in the Application at page 31.

Regarding dependent claim 3, the proposed combination of references fails to teach or suggest the claim 3 recitation that:

> the weight of printed image per unit area of substrate film of the portion of the printed image extending into the heat-sealed region is at least substantially equal to the weight of printed image per unit area of substrate film outside of the heat-sealed region.

Regarding dependent claim 4, the proposed combination of references fails to teach or suggest the claim 4 recitation that:

> the gloss of the coated, printed film in the heat-sealed regions is at least substantially equal to the gloss of the coated, printed film outside of the heat-sealed regions.

Regarding dependent claim 5, the proposed combination of references fails to teach or suggest the claim 5 recitation that:

> the coated, printed film is capable of being exposed to 60 psig of contact pressure between the radiation-cured varnish and an aluminum foil for 2 seconds at a temperature of at least 250°F with less than 5 weight % of the printed image being transferred to the foil.

Dependent claim 6 recites polyvinyl alcohol. Nakai does not teach or suggest polyvinyl alcohol. The Examiner asserts that it would have been obvious to modify Nakai to substitute polyvinyl alcohol for "other conventional plastic films." (Office Action mailed June 19, 2003 at page 3, line 18 to page 4, line 2.) However, in previously restricting the claims, the Examiner took the position that the use of polyvinyl alcohol is patentably distinct from the use of several species of polymers, including polyvinylidene chloride as well as several types of polyamide, polyethylene, polypropylene, and other polymers. (Office Action mailed February 13, 2003 at page 2, lines 8-17.) Applicants agree with the Examiner's earlier position of non-obviousness of substituting polyvinyl alcohol for other polymers.

Regarding each of the dependent claims 7-15, 17, and 27-36, none of the Office Actions have set forth a notification of the reasons for the rejections of these claims, as required by 35 U.S.C. §132(a) (cited by MPEP §707). The Examiner has not specifically addressed each of the dependent claim recitations for claims 7-15, 17, and 27-36 in addition to those of independent claim 1 to establish the rationale for a *prima facie* case of obviousness. Applicants will not unduly lengthen this brief by reproducing here each of the dependent concepts recited in each of these claims; however, the Appendix contains the full text of these dependent claims. The proposed combination of references fails to teach or suggest these recited dependent concepts. Further, since no supported reason has been put forth for the non-patentability of claims 7-15, 17, and 27-36, Applicants respectfully request allowance of these claims.

B. Claims 18-21.

With respect to independent claim 18, none of the references taken either alone or in combination teach or suggest the claim recitation:

> wherein the weight of the radiation-cured varnish per unit area of substrate film in the portion of the radiation-cured varnish extending into the heat-sealed region is at least substantially equal to the weight of radiation-cured varnish per unit area of substrate film outside of the heat-sealed region.

This feature is discussed in the Application at page 31.

As discussed above, a claimed invention is not obvious in view of a combination of references that fails to teach or suggest all of the claim recitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (cited by MPEP §2143.03). None of the references cited in the Office disclose or suggest the above-cited recitation. Nakai fails to make any disclosure or suggestion as to heat-sealed regions.

The Examiner fails to address the specific recitation of claim 18 set forth above. Rather, the Examiner simply states that "to apply the varnish overprinting that will extend into a seal area would have been obvious." (Office Action mailed June 19, 2003 at page 5, lines 6-7.) The Examiner also states that "Nakai and the art taken as a whole teach the radiation cured coatings have excellent physical qualities"; therefore, it would have been obvious "to modify Nakai and provide a conventional sealed packaging arrangement." (Office Action mailed June 11, 2002 at page 4, lines 10-16.)

However, the Examiner fails to point out anything in the prior art that teaches or suggests that the weight of a radiation-cured varnish in the heat-sealed region is at least substantially equal to the weight of the radiation-cured varnish outside of the heat-sealed region, as recited in claim 18. The Examiner simply concludes that it is obvious. This is precisely the approach rejected by the Federal Circuit, for example, in *In re Thrift* and *In re Lee* (both discussed above with respect to claim 1).

The Examiner further states in conjunction with claim 18 that "the properties of the [hypothetically modified Nakai] package would not have been unexpected but expected in view of the art taken as a whole." (Office Action mailed June 11, 2002 at page 4, lines 14-16.) However, Applicants have not argued unexpected results to overcome a *prima facie* case of obviousness. Applicants need not show indicia of non-obviousness (e.g., unexpected results) unless the burden of rebuttal has been shifted to Applicants by a *prima facie* case of obviousness.

Applicants respectfully assert that a *prima facie* case of obviousness has not been established to shift the burden of rebuttal to Applicants for the reasons discussed above.

The Office Actions fail to specifically address the dependent concepts of claims 19-21. Regarding dependent claim 19, the proposed combination of references fails to teach or suggest the claim 19 recitation that:

> the weight of printed image per unit area of substrate film of the portion of the printed image extending into the heat-sealed region is at least substantially equal to the weight of printed image per unit area of substrate film outside of the heat-sealed region.

Regarding dependent claim 20, the proposed combination of references fails to teach or suggest the claim 20 recitation that:

> the gloss of the coated, printed film in the heat-sealed regions is at least substantially equal to the gloss of the coated, printed film outside of the heat-sealed regions.

Regarding dependent claim 21, the proposed combination of references fails to teach or suggest the claim 21 recitation that:

> the coated, printed film is capable of being exposed to 60 psig of contact pressure between the radiation-cured varnish and an aluminum foil for 2 seconds at a temperature of at least 250°F with less than 5 weight % of the printed image being transferred to the foil.

C. Claims 22-26.

Nakai teaches that "the electron beam acceleration voltage should be from 100 to 3,000 kV." (Nakai, page 5, column 2, paragraph 22.) Independent claim 22 recites "an electron-beam radiation source having an energy of less than 100 keV." The Examiner states that the claim 22 recitation of exposing to "an electron-beam radiation source having an energy of less than 100 keV" would have been "an obvious determination for one of ordinary skill in the art in view of the art taken as a whole." (Office Action mailed June 19, 2003 at page 3, lines 11-12.)

Applicants respectfully submit that a *prima facie* case of obviousness has not been established to shift the burden of rebuttal to the Applicants because the Examiner has failed to point out any specific teaching or suggestion in the prior art that would have motivated one of skill in the art to make the proposed change. *See In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596

(Fed. Cir. 1988) (cited by MPEP §2143.01). The Examiner has failed to support with prior art his assertion that that one would decrease "the particular degree of energy" from that disclosed in Nakai in order "to achieve a high degree of polymerization." (Office Action mailed June 11, 2002 at page 4, lines 16-19.)

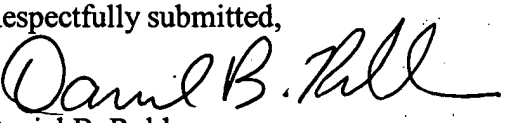
Further, as discussed above, a *prima facie* case of obviousness also requires that the prior art provide a reasonable expectation that the proposed modification will succeed – the reasonable expectation of success must *not* be based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (cited by MPEP §2142). None of the Office Actions have set forth a case for a reasonable expectation of success in modifying Nakai as proposed.

Regarding each of the dependent claims 23-26, none of the Office Actions have set forth a notification of the reasons for the rejections of these claims, as required by 35 U.S.C. §132(a) (cited by MPEP §707). The Examiner has not specifically addressed each of the dependent claim recitations for dependent claims 23-26 in addition to those of independent claim 22 to establish a rationale for a *prima facie* case of obviousness. Applicants will not unduly lengthen this brief by reproducing here each of the dependent concepts recited in each of these claims; however, the Appendix contains the full text of these dependent claims. The proposed combination of references fails to teach or suggest these recited dependent concepts. Further, since no supported reason has been put forth for the non-patentability of claims 23-26, Applicants respectfully request allowance of these claims.

II. Conclusion

For the foregoing reasons, Appellant respectfully requests that the rejections be reversed.

Respectfully submitted,



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Appendix

1. A packaged food product comprising:

a food product;

a package enclosing the food product, the package comprising a coated, printed film comprising:

a substrate film comprising one or more thermoplastic materials, the substrate film having a print side and an opposing food side and an average thickness of less than about 15 mils;

an image printed on the print side of the substrate film;

a radiation-cured varnish over the printed image, the radiation-cured varnish formed by:

coating the printed image with a radiation-curable varnish comprising one or more polymerizable reactants and optionally one or more photointiators, wherein the radiation-curable varnish includes less than about 20 % monofunctional monomer based on the weight of the radiation-curable varnish; and

subsequently exposing the radiation-curable varnish to radiation sufficient to polymerize at least 90 weight % of the one or more polymerizable reactants;

wherein when the coated, printed film is tested according to the FDA migration test protocol, no more than 50 parts per billion total of any of the polymerizable reactants and the optional photoinitiators migrate within 10 days at 40°C from the coated, printed film into a food simulant selected from the group consisting of i) 95 weight % ethanol and 5 weight % water and ii) 5 weight % ethanol and 95 weight % water, the food simulant enclosed within a test container formed from the coated, printed film so that the food simulant contacts the food side of the substrate film and the ratio of volume of food simulant to surface area of coated, printed film is 10 milliliters per square inch.

2. The packaged food of claim 1 wherein:

the package comprises one or more heat-sealed regions;

at least a portion of the radiation-cured varnish extends into the heat-sealed region; and

the weight of the radiation-cured varnish per unit area of substrate film in the portion of the radiation-cured varnish extending into the heat-sealed region is at least substantially equal to the weight of radiation-cured varnish per unit area of substrate film outside of the heat-sealed region.

3. The packaged food of claim 1 wherein:

at least a portion of the printed image extends into the heat-sealed region; and

the weight of printed image per unit area of substrate film of the portion of the printed image extending into the heat-sealed region is at least substantially equal to the weight of printed image per unit area of substrate film outside of the heat-sealed region.

4. The packaged food of claim 1 wherein:

the package further comprises one or more heat-sealed regions;

the gloss of the coated, printed film in the heat-sealed regions is at least substantially equal to the gloss of the coated, printed film outside of the heat-sealed regions.

5. The packaged food of claim 1 wherein the coated, printed film is capable of being exposed to 60 psig of contact pressure between the radiation-cured varnish and an aluminum foil for 2 seconds at a temperature of at least 250°F with less than 5 weight % of the printed image being transferred to the foil.

6. The packaged food of claim 1 wherein the substrate film comprises polyvinyl alcohol.

7. The packaged food of claim 1 wherein the substrate film has an average thickness of less than about 5 mils.

8. The packaged food of claim 1 wherein the printed image is formed by applying one or more water- or solvent-based inks to the print side of the substrate film and drying the one or more inks.

9. The packaged food of claim 1 wherein the printed image is free of photoinitiator.

10. The packaged food of claim 1 wherein the printed image is formed by applying one or more radiation-curable inks to the print side of the substrate film and curing the one or more inks.

11. The packaged food of claim 1 wherein the package enclosing the food product comprises a vertical form-fill-sealed package.

12. The packaged food of claim 1 wherein the package enclosing the food product includes a lid comprising the coated, printed film.

13. The packaged food of claim 1 wherein the radiation-cured varnish of the coated, printed film has an average gloss of at least about 80% measured in accordance with ASTM D 2457 (60° angle).

14. The packaged food of claim 1 wherein the coated, printed film has an average gloss of at least about 80% measured in accordance with ASTM D 2457 (60° angle), has a crinkle test rating of at least 4, and can withstand at least 150 double rubs under the NPAC rub test without break in the printed image.

15. The packaged food of claim 1 wherein the average thickness of the radiation-cured varnish of the coated, printed film is less than about 5 micrometers.

17. The packaged food of claim 1 wherein the radiation-curable varnish includes less than 20 % reactant diluent based on the weight of the radiation-curable varnish.

18. A packaged food product comprising:

a food product;

a package enclosing the food product, the package comprising a coated, printed film comprising:

a substrate film comprising one or more thermoplastic materials, the substrate film having a print side and an opposing food side and an average thickness of less than about 15 mils;

an image printed on the print side of the substrate film;

a radiation-cured varnish over the printed image, the radiation-cured varnish formed by:

coating the printed image with a radiation-curable varnish comprising one or more polymerizable reactants and optionally one or more photointiators; and

subsequently exposing the radiation-curable varnish to radiation sufficient to polymerize at least 90 weight % of the polymerizable reactants;

wherein the package comprises one or more heat-sealed regions and at least a portion of the radiation-cured varnish extends into the heat-sealed region; and

wherein the weight of the radiation-cured varnish per unit area of substrate film in the portion of the radiation-cured varnish extending into the heat-sealed region is at least substantially equal to the weight of radiation-cured varnish per unit area of substrate film outside of the heat-sealed region.

19. The packaged food of claim 18 wherein:

at least a portion of the printed image extends into the heat-sealed region; and

the weight of printed image per unit area of substrate film of the portion of the printed image extending into the heat-sealed region is at least substantially equal to the weight of printed image per unit area of substrate film outside of the heat-sealed region.

20. The packaged food of claim 18 wherein the gloss of the coated, printed film in the heat-sealed regions is at least substantially equal to the gloss of the coated, printed film outside of the heat-sealed regions.

21. The packaged food of claim 18 wherein the coated, printed film is capable of being exposed to 60 psig of contact pressure between the radiation-cured varnish and an aluminum foil for 2 seconds at a temperature of at least 250°F with less than 5 weight % of the printed image being transferred to the foil.

22. A packaged food product comprising:

a food product;

a package enclosing the food product, the package comprising a coated, printed film comprising:

a substrate film comprising one or more thermoplastic materials, the substrate film having a print side, an opposing food side, and an average thickness of less than about 15 mils;

an image printed on the print side of the substrate film;

a radiation-cured varnish over the printed image, the radiation-cured varnish formed by:

coating the printed image with a radiation-curable varnish comprising one or more polymerizable reactants; and

subsequently exposing the radiation-curable varnish to an electron-beam radiation source having an energy of less than 100 keV in an amount sufficient to polymerize at least 90 weight % of the polymerizable reactants.

23. The packaged food of claim 22 wherein the radiation-cured varnish is formed by exposing the radiation-curable varnish to an electron beam radiation source having an energy of less than about 75 keV.

24. The packaged food of claim 22 wherein the radiation-curable varnish includes less than 20 % monofunctional monomer based on the weight of the radiation-curable varnish.

25. The packaged food of claim 22 wherein the radiation-curable varnish includes less than 20 % reactant diluent based on the weight of the radiation-curable varnish.

26. The packaged food of claim 22 wherein the radiation-curable varnish is cured by a free radical mechanism.

27. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 10 % monofunctional monomer based on the weight of the radiation-curable varnish.

28. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 5 % monofunctional monomer based on the weight of the radiation-curable varnish

29. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 1 % monofunctional monomer based on the weight of the radiation-curable varnish

30. The packaged food of claim 1 wherein the radiation-curable varnish is essentially free of monofunctional monomer.

31. The packaged food of claim 1 wherein the radiation-curable varnish is essentially free of reactive diluent.

32. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 20 % monofunctional oligomer based on the weight of the radiation-curable varnish.

33. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 10 % monofunctional oligomer based on the weight of the radiation-curable varnish.

34. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 5 % monofunctional oligomer based on the weight of the radiation-curable varnish.

35. The packaged food of claim 1 wherein the radiation-curable varnish includes less than about 1 % monofunctional oligomer based on the weight of the radiation-curable varnish.

36. The packaged food of claim 1 wherein the radiation-curable varnish is essentially free of monofunctional oligomer.